MASS SPECTROMETER FOR ENTRAINED PARTICLES, AND METHOD FOR MEASURING MASSES OF THE PARTICLES

ABSTRACT OF THE DISCLOSURE

A particle mass spectrometer includes a supersonic flow expansion nozzle, and a source of a gas having particles entrained therein. The source is in gas-flow communication with an inlet of the expansion nozzle. The particle mass spectrometer further includes a vacuum chamber in gas-flow communication with an outlet of the expansion nozzle, wherein the vacuum chamber has a sufficient vacuum that a gas flow through the expansion nozzle is supersonic, and a microphone having an active element and an output signal responsive to a movement of the active element. The active element is disposed within the vacuum chamber and is positioned so that particles that flow from the outlet of the expansion nozzle impact upon the active element. The output signal of the active element of the microphone is a measure of the masses of the entrained particles.